

George Grenfell and the Congo, Harry Johnston, London 1908

(George Grenfell, a well-known Congo-missionary and explorer, was born in Sancred, August 21st, 1849 and arrived in the Cameroons 1875 but later moved to the Congo in 1880, accompanied by Swedish missionaries. He died in Basako in 1906. His biography was written by George Hawker. Harry Johnston was a prolific English author about Africa in the early 20th century)

Native diseases – Sleeping Sickness

The most prominent diseases among the Congo negroes and the most fatal are sleeping sickness, smallpox, dysentery, malarial fever and pneumonia.

It is fairly certain from the Arab records of Western Nigeria that some form of sleeping sickness was known there about the twelfth century of the present era, and that several notabilities died of this sleeping disease. It was certainly heard of in sporadic cases on the Gambia, at Sierra Leone, and in the western part of Liberia between about 1785 and 1840. Between 1820 and 1870 it occurred with some frequency in the coast region of Liberia. It is not by any means extinct in that country yet. The Mandingo trader whose portrait appears as a frontispiece to my book on Liberia, and who travelled with me on the St Paul's River in 1904, died of sleeping sickness at the end of 1905.

Winwood Reade alludes to the disease as one that is well known on the West Coast of Africa. Tis would be about the middle of the sixties on the last century. The present writer heard a good deal about sleeping sickness when he first visited the Congo in 1882-3, but the disease apparently did not exist then east of Stanley Pool. One only heard of cases on the north and south banks of the Congo between Matadi and the sea.

The opening up of the Congo by Stanley's expedition and other agencies seems to have carried sleeping sickness on to the upper reaches of the river from which it spread to all parts of the Congo basin, making a special nidus in the Ituri Forest on the north-east and on the upper Aruwimi (I quote from information given me by Swahili traders and intelligent natives coming from these regions). Emin Pasha's Sudanese when they settled down in the Lendu country to the west of Lake Albert seem to have become infected with the disease. A portion of these troops was moved somewhat rapidly into Busoga, the district of the Uganda Protectorate which is on the opposite bank of the Victoria Nile to the kingdom of Uganda. After the Sudanese troops of Lugard's recruiting had thoroughly settled down in Busoga, sleeping sickness began very slowly to develop. Possibly its spread was checked by the convulsions and displacement of population occurring during the Uganda mutiny. The present writer first heard of cases of sleeping sickness (which reminded him of those met with many years before on the Congo) in the early spring of 1901, when visiting the coast of Busoga and the island of Buvuma. Since that date the history of this disease in Uganda Protectorate is too well known to recapitulate.

But what deserves special attention at this moment is the appalling ravages of sleeping sickness in the western part of the Congo basin, as reported by travellers like Torday and Frobenius and by numerous missionaries. It seems to be killing out sections of the Bayaka on the Kwango River. In some of these

districts it would seem almost as though sleeping sickness had returned, as though somewhere in the Congo basin this disease had acquired a new, a sudden, and very serious virulence.

I cannot recall any traditions or recorded history of the West Coast of Africa from the Senegal to the Congo mouth in which any serious epidemic of sleeping sickness is mentioned. Through the centuries which have elapsed since Arabized negroes inscribed the history of the Muhammadan Mandingo kingdoms round the sources of the Niger, sleeping sickness has been a known disease, occurring sporadically here and there, but never to such an extent as to create widespread alarm or serious depopulation. It scarcely bore this devastating character even in the early eighties, when it affected the Lower Congo. Indeed the records of the Baptist Mission at San Salvador, etc., would seem to show that sleeping sickness has come back there from the east, from the inland basin of the Congo, and is afflicting the country far worse than it did in the sixties and seventies. The matter is really becoming very urgent for those who take an interest in the commercial development of Africa, as the spread of the disease is attaining such proportions as may almost end in the depopulation of the Congo basin and of the Uganda Protectorate, while the extension of the malady into British Central Africa and the Egyptian Sudan is also a matter of concern. The area of sleeping sickness certainly seems to be limited by the range of one or two species of tsetse that do not care about parts of Africa without heavy rainfall and abundant vegetation, and it may be that where these forms of tsetse cannot live no other agency may be present to transmit the trypanosomes from the blood of infected human beings to the veins of other people not yet inoculated.

Sleeping sickness is a 'human tsetse fly disease' (*Further Report on Sleeping Sickness*, Lt Col D Bruce, Dr A Nabarro and Capt Greig). How it is stated is a mystery as much unsolved as the original inception of most other diseases. It is due to a trypanosome – possibly *Trypanosome gambiense* – passing from the blood of an infected human being into the cerebro-spinal fluid. From the moment these micro-organisms enter the spinal marrow, and thence the brain, death is almost certain, after a more or less lengthy period of increasing somnolence.

(The genus *Trypanosoma* is a micro-organism of the class *Flagellata*, sub-kingdom *Protozoa*. The flagellates are mobile cells very similar in shape and movements to the spermatozoa of the higher animals [*Metazoa*], to the male element in life. Apparently, to pass completely through all the stages of their life stages and be able to reproduce sexually instead of by fission, they enter the digestive organs of a goat, a fly, some other insect, or possibly a tick. The insect host conveys the multiplied trypanosomes into the blood of the creature it sucks, and in doing so receives apparently more germs for maturing and redistributing. The genus *Trypanosoma* has a terrible record as a devastating agency among vertebrates. *Trypanosoma evansii* is the cause of the 'surra' disease among cattle, sheep, goats, antelopes in India; *T. brucei* is the germ of the 'nagana' or tsetse disease among cattle and horses in Africa; *T. ronneleti* produces the 'dourine' malady in horses, dogs and rodents in Hungary, the Mediterranean basin and Spanish America; in the last named region *T. equinum* imparts the 'caderas' or falling sickness to horses, mules, and many other mammals; *T. theileri* is the origin of a bad cattle disease in the Transvaal. According to Dr Marcus Hartog of the *Cambridge Natural History*, another flagellate, nearly allied to *Trypanosoma* – *Treponema* – is, in different species, responsible for syphilis, relapsing fever, and that terrible African skin disease the 'yaws' (*Framboesia*). The transmitting agent in Indian relapsing fever seems to be the head louse; in Africa it is a tick [which is not an insect but an arachnid]. A tick also seems to communicate the yaws from one negro to another.)

The trypanosomes which cause this disease are conveyed to the blood of human beings by one agency only (so far as we know) – the *Glossina palpalis* fly, in one or more varieties. They multiply rapidly, and their presence in the blood causes a peculiar fever, ‘trypanosomiasis’. Removed from further sources of infection and treated with proper remedies for expelling the trypanosomes from the blood, the sick person recovers; but if the case is not treated promptly the organisms will make their way into the spinal marrow and sleeping sickness sets in.

The fly which acts as the principal, if not the only agent of transmission in conveying these trypanosomes to the human system – the *Glossina palpalis* – has at present a range extending from the Senegal and Gambia to the Bahr-al-Ghazal, the eastern shore of the Victoria Nyanza, and the west coast of Lake Rudolph up to the River Omo. Southwards it apparently covers the whole Congo basin up to Tanganyika and the Zambezi watershed. In Angola it develops a local variety – *G palpalis wellmani*, discovered by Dr F C Wellman near Benguela. Benguela, so far, is the southernmost limit of the sleeping sickness on the Angola coast.



(My information is mainly derived from the monograph of the Tsetse Flies by E E Austen published by the British Museum Trustees in 1903, and the later pamphlet of Mr Austen on the Distribution of the Tsetse Flies issued in 1905 by the Royal Society. In his earlier monograph Mr Austen identifies tsetse flies caught by Sir John Kirk on the (Central?) Zambezi, circa 1860, as *Glossina palpalis trachinoides*, but apparently abandoned this definition subsequently in defining the limits of the ‘sleeping sickness fly’. *Palpalis*, however, does extend to the south-eastern parts of the Congo basin, and already sleeping sickness has made its appearance in the southern parts of British Central Africa)

The appearance of *Glossina palpalis* is sufficiently indicated in the accompanying illustration, which I have been permitted to publish by the trustees of the British Museum and which are adapted from Mr Engel Terzi’s illustrations to Mr E E Austen’s monograph. The smaller figure is approximately life size with wings folded back, the position assumed by the fly when at rest. It is never seen (unlike the house fly) with separated wings except when in flight.

The general colour is darkish brown. The veins of the wings are brown, the back of the abdomen is blackish brown, the back of the thorax ash grey with dark brown *ocelli* and markings. It is altogether a much darker fly in colouration than the other species of *Glossina*, and perhaps the smallest in size. I have mentioned that sleeping sickness was known in Angola and along the Lower Congo in the middle of the nineteenth century. It seemed to lessen in frequency after about 1870, but reappeared again at the close of the century in the kingdom of Kongo (San Salvador) and in southern Angola coming from the north east. At the same time – between 1892 and 1898 – it spread rapidly from a centre on the Kwa or lower Kasai, reaching the Nile watershed on the north-east and the west coast of Tanganyika on the east. Thousands – perhaps hundreds of thousands – of negroes have died of it since 1895 along the main course of the

Congo and Mubangi, up the Kasai, on the Lualaba-Congo and along the west coast of Tanganyika. As related previously; it seems to have reached Lake Albert along the courses of the Aruwimi and Wele-Mubangi, passing from the head waters of these rivers to the Lendu country where Emin Pasha's Sudanese were settled. It infected their Lendu slaves and followers, and thus was transported in the subsequent movements of the troops to Busoga and Uganda. On the main Congo itself the disease does not appear to have been a complete novelty. According to the researches of Father De Vos, a Belgian missionary, it was known traditionally among the Bayanzi-Babangi as a disease 'once prevalent among them' on the banks of the lower Kasai. It reappeared in this region ten or fifteen years ago.

Torday states that "the right and left banks of the Congo eastwards as far as Nouvelle Anvers (Bangala) and the Mubangi as far as the highlands near the Grenfell Falls may be regarded as centres of infection: here the disease is endemic. There is a great deal of sleeping sickness, called *Tol'*, amongst the Bahuana along the banks of the great Kwilu River. Persons taken with this disease are rubbed violently with manioc leaves". Among the Balolo, Ngombe and Bangala, sleeping sickness is called the disease from the sky, *Bokono na Likolo*.

According to Father Heymans: "When a native attacked by this illness or some other, is on the point of death, he is made to sit on a mat stretched on the ground, and his back is supported by two sticks, fixed vertically in the ground. After that, the whole body of the sick man is covered with *ngola*, a colouring material of a bright red, extracted from a tree of the same name. That done, they quietly prepare before his eyes the numerous mats destined to bury him".

Holman Bentley, writing in 1899, refers to sleeping sickness as a disease which appears and disappears from time to time. He wrote of course unawares of the *Trypanosoma* and *Glossina* explanation, which was not to be made known until four years later, but he guesses at the cause being a blood parasite and the transmitting agency a blood-sucking insect. At the same time he discusses the theory (also advanced by other authorities in Uganda) that the disease may be conveyed from one person to another by infected saliva. He instances the great mortality from sleeping sickness occurring among parties of natives who eat out of the same bowl and drink from the same gourd or vessel (putting their fingers into their mouths, and then into the food receptacle). He refers to the 'terrible mortality' at the American Baptist Mission at Banza Manteke about 1892-3, attributed to the administration of the Communion to a large number of Christian natives, fifty to sixty per cent of whom died. The natives throughout the Lower Congo believe in the contagion of sleeping sickness through the mouth; but of course this theory of infection may be explained by proximity on these occasions of meals and festivals; the murderous tsetse fly passes from one body to another transmitting the trypanosomes,

Grenfell in the later years of his life, advanced the theory that the best foe for combatting the tsetse fly was a species of heron. This bird he once wounded and placed in his boat. He was surprised to see it, even though scared and in pain, diligently picking the tsetse flies of the legs of native boatmen. He subsequently noted how this bird (unfortunately he gives no clear indication of its genus) snapped at flies as it strode along river banks. The small white herons (*Bubulens*) and the Squacco heron (*Ardeola*) have been observed by the present write in Central Africa to live mainly on insects, and to frequent the herds of cattle or buffalo in order to pick the flies off their flanks and limbs. If it could be established that they make a special attack on the tsetse, than they should be protected and encouraged till they swarmed over tropical Africa.

The history of sleeping sickness research is herewith summarised from articles in the *British Medical Journal*, May and November 1903.

Four stages in the development of knowledge with regard to the relation of trypanosomes may be distinguished:

1. The recognition of a trypanosome in the blood of a mammal (rat) by Dr Timothy Lewis in India in 1877
2. The discovery in 1880 by Griffith Evans in the Punjab of a trypanosome in the blood of horses, mules and camels suffering from a disease well known under the name of *surra* in India; and the demonstration by Sir David Bruce in 1896 that the *nagana* or fly disease of horses, cattle and some wild animals in South-East Africa (Zululand) was in truth carried by a biting fly (*Glossina*), and that the infective agent carried was a trypanosome, since appropriately named *T brucei*
3. The discovery by Forde in the blood of a man of a trypanosome fully described by Dutton (*T gambiense*), and the recognition by (Sir Patrick) Manson and others that the presence of the trypanosome in the blood of a man caused fever and certain other more or less characteristic symptoms
4. The proof afforded by the researchers of Dr Castellani (in Uganda) in 1902-3 and of Colonel (Sir David) Bruce and Lady Bruce, Dr Nabarro and Captain Greig, I.M.S., in 1903 that the trypanosome finds its way into the cerebo-spinal fluid (as stated by Dr Castellani) and when it does so it produces sleeping sickness; and finally
5. That the parasite is carried to man by a biting fly which is a species of the same species, *Glossina*, as that which carries the trypanosome of *nagana* to cattle. The fly which carries sleeping sickness is *Glossina palpalis*, that which carries *nagana* *Glossina morsitans*. They are so much alike that without care the one may easily be mistaken for the other, yet the limitation of sleeping sickness to the area in which *Glossina palpalis* occurs appears to prove conclusively that its congener does not harbour the trypanosome of sleeping sickness.